

AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A construction method for an exhaust heat recovery boiler [[that]] which generates steam by disposing providing a number plurality of heat exchanger tubes in a gas duct in that which an exhaust gas flows almost generally horizontally, [[a]] the construction method for exhaust heat recovery boiler wherein, comprising:

providing a heat exchanger tube bundle panel module, the heat exchanger tube bundle panel module comprising: including:

a plurality of heat exchanger tube bundle panels disposed along the positioned in a gas flow direction, the plurality of heat exchanger tube bundle panels including a number plurality of heat exchanger tubes, upper and lower headers provided at opposing ends of the heat exchanger tubes of the heat exchanger tubes, and vibration restraining supports that are disposed at provided at predetermined intervals to prevent contact between adjacent heat exchanger tubes in [[the]] a direction crossing transverse to the lengthwise direction of the heat exchanger tubes[[;]],

a casing that forms defining the gas duct, the casing which is attached inside with having a thermal insulating material provided inside of the casing so as to cover the an outer periphery consisting of the gas duct, the outer casing comprising a ceiling wall, [[the]] a bottom wall, and [[both-]]side-walls along the gas flow of the plurality of heat exchanger tube bundle panels[[;]],

heat exchanger tube bundle panel support beams located outside the ceiling wall of the casing, the heat exchanger tube bundle panel support beams comprising ceiling walls of the casing when installed in the exhaust heat recovery boiler to become the ceiling wall at the time of installation at the boiler construction site[[;]],

header supports [[that]] which penetrate the ceiling wall of the casing and connect the upper headers [[and]] to the heat exchanger tube bundle panel support beams, the header supports being configured to support a plurality of heat exchanger tube bundle panels to hang the upper headers down[[;]],

vertical module frames [[as]] comprising vertical support members of the heat exchanger tube bundle panels located outside both the side-walls of the casing, the vertical support members comprising side walls of the casing when installed in the boiler to become both side walls at the time of installation at the boiler construction site[[;]], and

horizontal module frames [[as]] comprising horizontal support members of the heat exchanger tube bundle panel located outside the ceiling wall and bottom wall of the casing, the horizontal support members comprising ceiling walls and

bottom walls of the casing when installed in the exhaust heat recovery boiler to become the ceiling wall and the bottom wall at the time of installation at the construction site,

is set as the heat exchanger tube bundle panel module comprising at least one of a plurality of one module unit and a necessary number of modules [[are]], the at least one of a plurality of modules prepared in a proper having a size according corresponding to the design specifications parameters of the exhaust heat recovery boiler,

wherein when transporting the heat exchanger tube bundle panel module, vibration restraining fixing members configured to prevent vibration of the heat exchange tubes are positioned between the vibration restraining supports and the casing, the heat exchanger tube bundle panel module having the vibration restraining fixing members positioned between the lower headers and the casing;

providing main frames for supporting configured to support the heat exchanger tube bundle panel module, the main frames including [[the]] main columns, [[the]] main beams and [[the]] bottom wall columns are constructed in advance at the which are constructed at a construction site of the exhaust heat recovery boiler prior to installing the heat exchanger tube bundle panel module,

inserting the heat exchanger tube panel at least one of a plurality of modules [[are]] inserted between an adjacent two main columns and setting a height of the heat exchanger tube panel support beams of the heat exchanger tube bundle panel modules are set at the to a setting height of the main beams [[at]]

prior to installing the heat exchanger tube bundle panel module at the exhaust heat recovery boiler construction site, [[and]]

[[the]] connecting and fixing the vertical module frames and the main columns to each other, connecting and fixing the horizontal module frame on the ceiling wall side and the main beam to each other, and connecting and fixing the horizontal module frame on the bottom wall side and the bottom wall columns are connected and fixed to each other.

2.-4. (Canceled)

5. (Currently Amended) The exhaust heat recovery boiler construction method according to Claim 1, wherein further comprising:

sizing each heat exchanger tube bundle panel module formed into a size that enables so as to allow at least two of the at least a plurality of modules two or more modules to be disposed positioned in [[the]] a horizontal direction of a plane which is orthogonal to the gas flow of the exhaust heat recovery boiler[,,]; and

[[when]] providing first aseismic braces that connect the end portion inner side of the casing to become which comprises the ceiling wall of the heat exchanger tube bundle panel module and the central portion inner side of the casing to become which comprises the side wall of the heat exchanger tube bundle panel module respectively, and are the first aseismic braces being located at positions facing the heat exchanger tube bundle panels on at least one of [[the]] a

surface side and/or the and a back surface side in the gas flow direction, and

[[the]] providing second aseismic braces that connect the end of the casing ~~to become which comprises~~ the bottom wall side of the heat exchanger tube bundle panel module and the central portion inner side of the casing ~~to become which comprises~~ the side wall of the heat exchanger tube bundle panel module respectively, [[are]] the second aseismic braces being located at positions facing the heat exchanger tube bundle panels on at least one of the surface side and/or and the back surface side in the gas flow direction, wherein the first and second aseismic braces are ~~used not only not removed~~ during transportation and installation ~~at the boiler construction site~~ of the heat exchanger tube bundle panel modules, ~~but also are used even the first and second aseismic braces being not removed~~ after completion of the ~~exhaust heat recovery~~ boiler construction ~~installation without removing the braces.~~

6. (Currently Amended) The exhaust heat recovery boiler construction method according to Claim 5, wherein further comprising:

providing, during transportation of heat exchanger tube bundle panel modules, transporting spacers ~~are located~~ that maintain [[the]] distances between the first and second aseismic braces and the surfaces and the back surfaces in the gas flow direction of heat exchanger tube bundle panels.

7. (Canceled)

8. (Currently Amended) A heat exchanger tube bundle panel module for construction of an exhaust heat recovery boiler which generates steam by ~~disposing a number providing a plurality~~ of heat exchanger tubes inside a gas duct in that ~~exhaust~~ which gas flows horizontally[[;]], the heat exchanger tube bundle panel module for construction of an exhaust heat recovery boiler comprising:

a plurality of heat exchanger tube bundle panels ~~disposed along the positioned in a~~ gas flow direction, each including a ~~number~~ plurality of heat exchanger tubes, upper and lower headers provided at opposing ends of the heat exchanger tubes, and vibration restraining supports ~~located~~ provided at predetermined intervals in a direction ~~crossing the~~ transverse to a lengthwise direction of the heat exchanger tubes and configured to prevent contact between adjacent heat exchanger tubes;

a casing ~~that forms~~ defining the gas duct, the casing having ~~which is attached inside with~~ a thermal insulating material provided inside of the casing and covering the outer peripheral portion ~~consisting of~~ of the gas duct, the casing comprising [[the]] a ceiling wall, [[the]] a bottom wall, and ~~both~~ side walls each extending along the gas flow direction of the plurality of heat exchanger tube bundle panels;

~~heat exchanger tube bundle panel support beams located outside the ceiling wall of the casing to become, the heat exchanger tube bundle panel support beams comprising the ceiling wall at the time of installation at the boiler construction site~~

when the heat exchanger tube bundle panel module is installed in the exhaust heat recovery boiler;

header supports that penetrate the ceiling wall of the casing and connect the upper headers and the heat exchanger tube bundle panel support beams, the header supports being configured to support the heat exchanger tube bundle panel module to hang the upper headers down;

vertical module frames [[as]] comprising vertical support members for the heat exchanger tube bundle panels located outside the casing to become, the vertical support frames comprising [[both]] side-walls at the time of installation at the boiler construction site when the heat exchanger tube bundle panel module is installed in the exhaust heat recovery boiler, the vertical support frame member being provided on a casing side, the vertical support frame further comprising first aseismic braces that connect the end portion inner side of the casing which comprises the ceiling wall and the central portion inner side of the casing which comprises the side wall casing, the first aseismic braces facing the heat exchanger tube bundle panels on at least one of the surface side and the back surface side in the gas flow direction of each heat exchanger tube bundle panel module, and second aseismic braces which connect the end of the casing comprising the bottom wall side and the central portion inner side of the casing comprising the side wall side, the second aseismic braces being positioned to face the heat exchanger tube bundle panels on at least one of the surface side and the back surface side in the gas flow direction; and

horizontal module frames [[as]] comprising horizontal support members for the heat exchanger tube bundle panels located outside the ceiling wall and outside the bottom wall of the casing ~~to become, the horizontal module frame comprising~~ the ceiling wall and bottom wall at the time of installation at the boiler construction site when the heat exchanger tube bundle panel module is installed in the exhaust heat recovery boiler, wherein

~~when installing the exhaust heat recovery boiler at the construction site, a~~ the heat exchanger tube bundle panel module formed into a size enabling is sized to allow at least two or more heat exchanger tube bundle panel modules to be disposed positioned adjacent to each other in the horizontal direction of a plane orthogonal to the gas flow of the ~~exhaust heat recovery boiler is set as one module unit, and, the heat exchanger tube bundle panel module being configured to be positioned~~ among main frames for ~~supporting of the exhaust heat recovery boiler which are configured to support modules including, the main framed comprising~~ main columns, main beams, and bottom wall columns to be constructed in advance at the construction site of the ~~exhaust heat recovery boiler~~, the main columns and the vertical module frames, the main beams and the horizontal module frame on the ceiling wall side, and the bottom wall columns and the horizontal module frame on the bottom wall, ~~respectively, side can be~~ being configured to be connected and fixed to each other.

9.-10. (Canceled)

11. (Currently Amended) The heat exchanger tube bundle panel module for construction of an exhaust heat recovery boiler according to Claim 8, wherein the vertical module frames ~~is located~~ are provided with a first transporting reinforcing member that couples the end of the casing ~~to become~~ comprising the ceiling wall side and the end of the casing ~~to become~~ comprising the bottom wall side to each other, and ~~[[is]] the first transporting reinforcing member being configured to be~~ removed after ~~completion of installation of the heat exchanger tube bundle panel module in the exhaust heat recovery boiler is completed~~, and a plurality of second transporting reinforcing members that couple the first transporting reinforcing member and the casing ~~to become~~ the side-wall side to each other and are removed after ~~completion of installation in the boiler~~ installation of the heat exchanger tube bundle panel module in the exhaust heat recovery boiler is completed, ~~the second transporting reinforcing members being positioned to face the heat exchanger tube bundle panel modules on~~ at least one of the surface side ~~and/or~~ and the back surface side in the gas flow direction of the respective heat exchanger tube bundle panels.

12.-13. (Canceled)

14. (Currently Amended) The heat exchanger tube bundle panel module for construction of an exhaust heat recovery boiler according to Claim 8, wherein

vibration restraining fixing members are disposed positioned between the vibration restraining supports and the casing, and the vibration restraining fixing members are positioned between the lower headers and the casing.

15. (Currently Amended) The heat exchanger tube bundle panel module for construction of an exhaust heat recovery boiler according to Claim 8, wherein baffle plates are attached to ~~both~~ side surfaces of a plane orthogonal to the gas flow direction of the heat exchanger tube bundle panels of each heat exchanger tube bundle panel module, ~~respectively~~, and the baffle plates being positioned between the heat exchanger tube bundle panels of two modules ~~to be disposed~~ which are positioned adjacent to each other in the horizontal direction of a plane orthogonal to the gas flow, gas short pass preventive plates which are connected at one of the side surfaces [[to]] of the baffle plates ~~of one heat exchanger tube bundle panels~~, and the gas short pass preventive plates ~~come into contact at the~~ contacting the other one of the side surfaces of the baffle plates of the other heat exchanger tube bundle panel ~~are attached~~.

16. (Currently Amended) The heat exchanger tube bundle panel module for construction of an exhaust heat recovery boiler according to Claim 15, wherein the side surfaces of the gas short pass preventive plates are configured to come into contact with the baffle plates of each heat exchanger tube bundle panel, the side surfaces of the gas short pass preventive plates being [[are]] bent toward [[the]] a

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upstream side of the gas flow.